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09/683,129	11/21/2001	Scott E. Trevino	GEMS8081.108	1210

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EXAMINER
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LEE, HWA C

ART UNIT	PAPER NUMBER
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2672

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DATE MAILED: 06/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/683,129

Applicant(s)

TREVINO ET AL.

Examiner

Hwa C Lee

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 16-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 16-32, drawn to a magnetic resonance imaging (MRI) apparatus for acquiring medical imaging data, classified in class 378, subclass 162.
  - II. Claims 1-15, drawn to specific functions of a Graphical User Interface (GUI) for prescribing medical imaging session, classified in class 345, subclass 810.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because invention II comprises of an MRI system having a plurality of gradient coils positioned about a bore of a magnet to impress a polarizing magnetic field, and an RF transceiver system and an RG switch controlled by a pulse module to transmit RF signal to an RF coil assembly to acquire MR image. Proper functioning of the magnet, wherein a magnetic field is created in order to obtain MR images, does not require the specific functions of GUI as disclosed for invention II. The GUI allows user input during the medical imaging process, but the user input is not required. The MRI apparatus is able to obtain MR images in automatic

mode based on pre-programmed automation process without the need for user input using the GUI. The subcombination has separate utility such as the GUI of invention II is applicable to a plurality of medical imaging apparatus, such as CT, X-ray, and ultrasound imaging. The GUI allows the user to specify the parameters of the processes of obtaining and processing medical images but is not limited to an MRI apparatus. Further, the GUI of invention II is applicable to non-medical imaging apparatus, wherein user input is desired but not necessary.

3. The applicant elects with traverse, Group II on the currently amended application.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vara et al., U.S. Patent No.: 6,063,030 in view of Wu et al., U.S. Patent No.: 6,687,527.

7. In regards to claim 1, Vara et al. teaches ***a GUI for prescribing medical imaging sessions comprising: a plurality of modularizing selectors configured to facilitate workflow through an imaging application***

- Vara et al. teaches PC based ultrasound device with virtual control user interface, which specifically is a GUI for prescribing medical imaging sessions (FIGS. 1-24, Col. 4, line 46 –Col. 5, line 45). Said virtual control user interface a plurality of screen regions, wherein each screen regions corresponds to accomplishing different tasks. The screen regions (20, 34, 36, 38, 40) contain sets of displays and icon, wherein the icons represent the functions or commands of ultrasound imaging process. FIGS. 2-4 illustrates the dynamic menu and secondary menu, which allows the user to select specific imaging functions, which specifically are modularizing selectors (Col. 6, line 62 – Col. 7, line 1; Col. 7, line 55 - Col. 9, line 43).

***and a messaging module configured to automatically display messages regarding the imaging application.***

- Vara et al. Teaches the help and comment area (40), wherein textual explanatory material automatically remind the user that he or she must select the appropriate medical protocol (Col. 6, lines 37-50). Said help and comment area specifically is automatically displaying messages to the user.
8. Vara et al. teaches lighting up the icon when the icon is selected (Col. 6, lines 14-22), which specifically is displaying the selection of one of the modularizing selectors, but does not explicitly teach ***a plurality of status indicators, each status indicator***

**correlating with a modularizing selector and configured to display at least one of selection of the modularizing selector.** Wu et al. teaches user interface for clinical imaging system comprising MRI and other medical imaging methods and apparatus (Col. 1, lines 9-18). In one embodiment, Wu et al. teaches a GUI (60), wherein the user interacts with the MRI apparatus and receives feedback on the display device (50). The user selects and modifies a plurality of scan parameters through the GUI (Col. 7, lines 12-25). Then the display (50) displays the information relating to the scan parameters in graphical format (Col. 8, line 53 – Col. 9, line 65 and FIGS. 2A-E). Specifically, FIG. 2B displays monitor parameters, which specifically is a status indicator correlating to the user inputted scan parameters, and said scan parameters are inputted through the GUI, which comprises modularizing selectors as taught by Vara et al. Further, Wu et al. teaches displaying warning indicators to warn the user when certain parameter values enter an undesirable region (Col. 11, line 53 – Col. 12, line 14). Said warning indicators specifically are status indicators and messaging system.

9. Vara et al. and Wu et al. in combination teach displaying **completion of tasks associated with the modularizing selector.** Vara et al. teaches changing the time gain control (TGC) value using the virtual slide bar (60a and 60b). When said movement of the slide bar is completed, the sonographic image in the image area (12) is changed, which represents completion of changes in ultrasonic scan head (Col. 7, line 64 – Col. 8, line 24 and FIG. 3A). Wu et al. teaches that upon receiving scan parameters from the user, the display areas are reformatted. Said changes in the

display area specifically are displaying the completion of the change in the parameter value (Col. 15, lines 23-48).

10. It would have been obvious to one of ordinary skill in the art to take the teachings of Vara et al. and to add from Wu et al. the method of displaying status indicators in order to display the status of the medical imaging session to the user and thus help to manage the workflow of said medical imaging. Although Wu et al. teaches an user interface for MRI system, Wu et al. clearly discloses that the system is well suited to other medical imaging systems, and ultrasound imaging system as taught by Vara et al. specifically is other medical imaging system. Wu et al. teaches displaying warning messages, which would help the user to determine if any of the scan parameters were dangerously close to non-permissive states that could potentially damage the subject and/or the imaging system. Thus, by combining the teachings of Wu et al. to Vara et al., unwanted results are easily avoided by warning the user of potential problems with any scan parameters inputted by the user.

11. In regards to claim 2, Vara et al. and Wu et al. teach ***the GUI of claim 1***, and Vara et al. teaches ***further comprising at least two application regions and wherein the plurality of modularizing selectors are aligned vertically in a single application region***. FIG 1 clearly shows two application regions, wherein the plurality of icons representing different function is aligned vertically in a single region on the right side.

12. Claims 3-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vara et al., U.S. Patent No.: 6,063,030 in view of Wu et al., U.S. Patent No.: 6,687,527

as applied to claims 1-2 above, and further in view of Hoford et al., U.S. Patent No.: 5,950,002.

13. In regards to claim 3, Vara et al. and Wu et al. teach the GUI of claim 2. In addition, Vara et al. teaches a plurality of icons as applied to claim 1 above, wherein the selection of each icon produces a new graphical display corresponding to said icon. For example, when the TGC icon is selected by the user using a pointing device, graphical representation of the scan parameters relating to TGC are displayed in the image area (12) (FIGS. 3A-24). Said displaying of said graphical representation of the scan parameters specifically are plurality of display windows, and each display window corresponds to each icon. However, said windows are displayed on the same display area, and thus do not explicitly display physically separate "pop-up" windows, which are well known in the art.

14. Hoford et al. teaches a programmable medical imaging system, which is not limited to the type of imaging modality (col. 6, lines 7-18). The programmable imaging system includes tools for script generation and other programmability related tasks. The programmability tools enable the user to assign specific tasks to the desired GUI as chosen by the user (buttons, tabs, etc). The point and click action on a button can be programmed to implement the behavior of displaying a results screen or perform a series of processing operation. Said displaying a results screen specifically is displaying separate window for each button (modularizing selector) (Col. 6, line 20 – Col. 9, line 17 and FIG. 1). In addition, FIG 1 clearly shows a plurality of windows.



15. It would have been obvious to one of ordinary skill in the art to take the teachings of Vara et al. and Wu et al., and to add from Hoford et al. the method of programmable medical imaging system in order to implement separate display window corresponding to each modularizing selector. Hoford et al. teaches the method of creating graphical programs, wherein the medical imaging protocol can be created using graphical user interface objects such as buttons and tabs. By assigning different tasks to each GUI objects, the user can easily implement a medical imaging protocol. Hoford et al. clearly teaches implementing said medical imaging protocol graphically without having to using program coding. In addition, the appearance of the GUI can be controlled by the user since the graphical protocol is created by the user.

16. In regards to claim 4, the same basis and rationale for claim rejection as applied to claims 1-3 are applied. Both Vara et al. and Wu et al. teach displaying scan parameters necessary for initiating scan activity. The user must input scan activity in order for the imaging to initiate scan activity.

17. In regards to claim 5, Vara et al. and Wu et al. teach the GUI of claim 4. In addition, Vara et al. teach said GUI further comprising a messaging region is displayed in a lower portion of the GUI as applied to claim 1 above (FIG. 1, No. 40). Wu et al. teaches displaying the warning labels (status indicator) as applied to claim 1 above. Said status indicator is displayed in a lower portion of the GUI (FIG. 2B, No. 260). Since the warning label specifically is also a message, it would have been obvious to one of ordinary skill in the art to take the message display region of Vara et al. and to add the status indicator of Wu et al. in the same message display region in order to

indicate to the user both any instructions regarding the imaging process and any potentially dangerous warnings regarding the user input. In addition, Hoford et al. enables the user to create the graphical medical imaging program in the manner desired by the user, and thus the message display region can be programmed to be displayed together on the lower portion of the GUI.

18. In regards to claim 6, Vara et al. and Wu et al. teach the GUI of claim 1. In addition, Wu et al. teaches displaying warning label when the user inputted scan parameter is outside the permissible range. Thus, said display of warning label specifically is displaying pop-up dialog configured to display an invalidity of a user input. Further, as applied to claim 1 above, Hoford enables the user to attach behavior to each GUI object (buttons and tabs). Double clicking on the button results in displaying a results screen or to perform a series of processing operations (Col. 6, line 60 – Col. 7, line 8). Said displaying the messaging module including a pop-up dialog configured to display an invalidity of a user input specifically is displaying a results screen. In addition, Hoford teaches that the programmable medical imaging system comprises displaying images, dialogs, menus and tools (Col. 8, lines 26-52).

19. In regards to claim 7, the same basis and rationale for claim rejection as applied to claim 1-3 are applied. Vara et al. teaches said icons of claim 1, wherein the selection of specific icons opens secondary menus corresponding to application specific virtual GUI (FIGS 3A-24). Said icons are horizontally configured. In addition, Vara et al. teaches displaying the second major region (14), which are configured horizontally on top of the GUI. The second major region displays the program identification and probe

identification or ultrasound scan head identification, wherein said identifications are application specific depending on the type of scan head used (Col. 4, line 63 – Col. 5, line 7). Further, Hoford et al. teaches programmable medical imaging system as applied to claim 3 above, wherein the user controls the appearance of the GUI.

20. In regards to claim 8, the same basis and rationale for claim rejection as applied to claim 7 are applied. Vara et al. teaches wherein the plurality of application-specific selectors include a landmark selector (FIG. 2, No. 36 and FIGS. 17-19, the body icon represents body marker, which specifically is landmark), a patient information selector (FIG. 24, No. 36, Patient Information icon), an advanced settings selector (FIGS. 7-23 and Col. 5, lines 18-26; the dynamic menu control is primarily altered to reveal submenus and increasing details of user activated controls, which are advanced settings for each dynamic control), and a help selector (FIG. 1, 40).

21. In addition, Vara et al. teaches wherein each of application-specific selector is configured to launch a application specific window upon user selection (the same basis and rationale for claim rejection as applied to claim 7 above), wherein the application specific windows include a landmark window configured to aid user positioning of a scan subject (FIG. 16, No. 36 specifically controls the image orientation), a patient information window configured to display patient information (FIG. 24, No. 36, Patient Information icon), an advanced settings and parameters window configured to display advanced settings and parameters for the imaging application (FIGS. 7-23 and Col. 5, lines 18-26; the dynamic menu control is primarily altered to reveal submenus and increasing details of user activated controls, which are advanced settings for each

dynamic control), and a help configured to display assistance information related to the imaging application (the same basis and rationale for claim rejection as applied to claim 1 above and FIG. 1, 40). Further, Hoford et al. teaches programmable medical imaging system as applied to claim 3 above, wherein the user controls the appearance of the GUI.

22. In regards to claim 9, the same basis and rationale for claim rejection as applied to claims 2 and 7 are applied. Said icons for Vara et al. are configured vertically and horizontally, which facilitates left-to-right and top-to-bottom imaging workflow. Although Vara et al. teaches ultrasound imaging, both Wu et al. and Hoford et al. teach MR imaging. In addition, Hoford et al. teaches programmable medical imaging system as applied to claim 3 above, wherein the user controls the appearance of the GUI, and imaging protocol (imaging prescription) are created by the user. Thus, the teachings of Hoford et al. read on the left-to-right and top-to-bottom imaging workflow system. Further, the left-to-right and top-to-bottom system is a standard and well known direction in the art and other analogous art comprising GUI for processing workflow.

23. In regards to claim 10, the same basis and rationale for claim rejection as applied to claims 1 and 3 are applied. The combination of Vara et al., Wu et al. and Hoford et al. teach a graphical workflow management tool for prescribing an MR imaging scan, the tool including a GUI configured to be visually displayed on a console of a medical imaging system, as applied to claims 1 and 3 above.

24. In addition, Hoford et al. teaches the tool comprising: a plurality of prescription tabs aligned vertically on the GUI (Col. Col. 9, lines 3-64 and FIG. 1). The Tabs can be

placed anywhere by editing the layout screen using the template editor. Wu et al. teaches displaying a plurality of status indicators as applied to claim 1 above. Hoford et al. teaches editing screen layout, and thus allows the user to display said status indicators wherein each indicator is configured to display a status of activities for a corresponding prescription tab; and a plurality of context-specific tabs aligned horizontally on the GUI.

25. In regards to claim 11, the same basis and rationale for claim rejection as applied to claims 4 and 10 are applied. Wu et al. teaches displaying messages and status indicators to the user in the form of warning labels, which specifically are at least one of user messages, scanner information, state of current application, and components necessary to initiate a scan.

26. In regards to claim 12, the same basis and rationale for claim rejection as applied to claims 5, 7 and 10 are applied. Hoford et al. teaches wherein the plurality of prescription tabs are disposed generally along a left side of the GUI (Col. Col. 9, lines 3-64 and FIG. 1). Vara et al. (FIG. 1, No. 14) and Hoford et al. (Col. Col. 9, lines 3-64 and FIG. 1) teach wherein the plurality of context-specific tabs are disposed generally along a top region of the GUI. As applied to claim 5 above, Vara et al. teach and wherein the messaging module is disposed generally along a bottom region of the GUI.

27. In regards to claim 13, the same basis and rationale for claim rejection as applied to claims 3, and 10 are applied. As applied to claim 3 above, the combination of Vara et al., Wu et al., and Hoford et al. teach displaying a plurality of parameter windows configured to display a number of scan parameters associated with modularizing

selectors. Hoford et al. teaches creating prescription tabs as applied to claim 10 above. In addition, said prescription tab specifically is modularizing selectors.

28. In regards to claim 14, the same basis and rationale for claim rejection as applied to claim 1, 3 and 13 above. In addition, Wu et al. teaches a plurality of scan parameters, which are specific to the particular imaging scan and constrained by hardware and safety considerations (Col. 7, line 21 – Col. 8, line 52). Further, the important monitoring parameters, which necessitate displaying of warning labels, are displayed in graphical format (FIG. 2B, No. 260 and FIGS. 2C-2D).

29. In regards to claim 15, the same basis and rationale for claim rejection as applied to claim 10 are applied. Both Wu et al. and Hoford et al. teach applying the GUI to a plurality of imaging applications (modality), and thus the appearance of the GUI must be consistent since the same system is used to apply the visual appearance of the GUI. In addition, consistent appearance would help the user easily adapt from one imaging application to another.

### ***Response to Arguments***

30. Applicant's arguments filed 04/01/04 have been fully considered but they are not persuasive.

31. The applicant argues that the restriction made on the last office action was improper. The examiner disagrees with the applicant and maintains the restriction. Although Group I (claims 16-32) does disclose "GUI", the details of the GUI as disclosed in Group II are not incorporated. Said details of GUI comprise a plurality of

modularizing selectors, status indicators, messaging module, two application region, a plurality of modularizing selectors aligned vertically, a plurality of windows corresponding in number to plurality of modulating selectors, plurality of windows configured to present a number of scan parameters, messaging module includes a pop-up dialog configured to display an invalidity of user input. In addition, Group II does not incorporate the details of MRI apparatus comprising plurality of gradient coils positioned about a bore of a magnet to impress a polarizing magnetic field, and an RF transceiver system and an RF switch controlled by a pulse module to transmit RF signals to an RF coil assembly to acquire MR images. Thus Group I and Group II are distinct, and the restriction is maintained.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hwa C Lee whose telephone number is 703-305-8987. The examiner can normally be reached on M-F 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 703-305-4713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hwa C Lee  
Examiner  
Art Unit 2672

HCL  
06/09/04



**MICHAEL RAZAVI**  
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